

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

To:

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NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

(PCT Rule 71.1)

BRYN AARFLOT AS

16 AUG. 2004

Date of mailing
(day/month/year)

13.08.2004

Applicant's or agent's file reference
107694/AF

IMPORTANT NOTIFICATION

International application No.
PCT/NO 03/00111

International filing date (day/month/year)
07.04.2003

Priority date (day/month/year)
08.04.2002

Applicant
MEDITRON ASA

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the International
preliminary examining authority:



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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Rec'd PCT/PTO 08 OCT 2004

Applicant's or agent's file reference 107694/AF	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/NO 03/00111	International filing date (day/month/year) 07.04.2003	Priority date (day/month/year) 08.04.2002
International Patent Classification (IPC) or both national classification and IPC G01H11/08		
Applicant MEDITRON ASA		


CORRECTED
VERSION

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.
 - ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

- This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 04.11.2003	Date of completion of this report 13.08.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Köck, A Telephone No. +49 89 2399-2493



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/NO 03/00111**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1, 3-11 as published
2 received on 30.07.2004 with letter of 30.07.2004

Claims, Numbers

6 (part), 7-16 as published
1-5, 6 (part) received on 30.07.2004 with letter of 30.07.2004

Drawings, Sheets

1/7-7/7 as published

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/NO 03/00111**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1
Inventive step (IS)	Yes: Claims	
	No: Claims	2-16
Industrial applicability (IA)	Yes: Claims	1-16
	No: Claims	

2. Citations and explanations

see separate sheet

V. Reasoned statement under Article 35(2) PCT

1. The following documents have been considered for the purposes of this report:

D1 = US-A-3 947 644

D2 = US-A-3 792 204

D3 = DE-A-2 914 608

2. Article 33(2) (novelty)

A sensor unit for picking up mechanical vibrations with at least one piezoelectric foil strip (1) as a sensor element is known from D1 (Fig. 4), said strip (1) having signal wires (10) attached thereto for transporting out electrical signals representing vibration, where said strip (1) is held in a flat support (Fig. 2, (5)) at two opposite ends, and at least one further strip (1') for receiving vibrations and propagating them to said piezo strip is held in the same support (5) so as to extend in a curved manner along said first strip and provide at least one space between said strips.

With regard to the applicant's arguments it is noted that the piezo foil (1) of D1 may be regarded as a piezo strip and that opposite ends are held in flat support parts (5), as any point along the circumference has a corresponding opposite point. The further strip is piezo strip (1') in Fig. 4, which clearly receives vibrations and propagates them to piezo strip (1), as both strips are influenced by the other's movement. Even if the further strip of claim 1 were limited to a non piezo strip, the second piezo strip of D1 would still provide the same function as said further strip.

The present application does thus not satisfy the criterion set forth in Article 33(2) PCT because the subject-matter of claim 1 is not new in respect of prior art as defined in the regulations (Rule 64(1)-(3) PCT).

3. Article 33(3) PCT (inventive step)

The dependent claims are merely simple and routine features that the skilled man would include in a sensor unit, their subject-matter thus lacking an inventive step, see D1, cl. 1; D2, Fig. 3 and D3, Fig. 1a.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/NO03/00111

4. Industrial applicability

The claimed sensor unit may be used to pick up body vibrations.

5. The document D1 has not been identified in the description nor has the relevant background art disclosed therein been discussed. The requirements of Rule 5.1(a)(ii) PCT are, thus, not fulfilled.
6. The independent claims should have been drafted in the two-part form as required by Rule 6.3(b) PCT, whereby the features known from D1 should have been placed in the preamble.

CLAIMS

1. Sensor unit for picking up mechanical vibrations, sound and ultrasound, with at least one piezoelectric foil strip (piezo strip) (1; 1'; 1'') as a sensor element, said piezo strip having signal wires (5) attached thereto for transporting out electrical signals representing vibration, sound or ultrasound picked up, characterized
- in that said piezo strip (1; 1'; 1'') at two opposite ends is held in flat support parts (3; 3', 13), and
 - in that at least one further strip (2; 2'; 12) for receiving vibrations and propagating them to said piezo strip is held in the same support parts so as to extend in a curved manner along said piezo strip and provide at least one space between the strips.
2. The sensor unit of claim 1, characterized in that the support parts are separate support pieces (3) with holding details (6) for the strips, e.g. pockets.
3. The sensor unit of claim 1, characterized by two such further strips (2, 2'), one outside each surface side of said piezo strip (1).
4. The sensor unit of claim 1, 2 or 3, characterized in that said further strip(s) (2, 2') is/are a little stiff, thereby automatically tending to tension said piezo strip (1).
5. The sensor unit of claim 4, characterized in that said further strip(s) (2, 2') is/are attached loosely to at least one of the support parts (3), by being inserted into a pocket (6).
6. The sensor unit of claim 1, characterized in that the space between said piezo strip (1') and said further strip (2) is occupied by a substance (4) having the ability to transfer pressure, e.g. a silicon substance, said piezo strip (1') and said further strip (2)

Hence, in a first aspect of the present invention there is provided a sensor unit for picking up mechanical vibrations, sound and ultrasound, having at least one piezo-electric foil strip (piezo strip) as a sensor element, the piezo strip having signal
5 wires attached for exporting electric signals representing vibration, sound or ultrasound being picked up. The sensor unit in accordance with the invention is characterized in that the piezo strip is, at two opposite ends, held in flat support parts, and in that at least one further strip for receiving vibrations and propagating them to said piezo strip is held in the same support parts so as to extend in a curved
10 manner along the piezo strip, thereby to provide at least one space between the strips.

In a preferred embodiment of the invention, the support parts are separate support pieces having holding details for the strips, for instance pockets.

15 In another preferred embodiment, the sensor unit comprises two such further strips, one outside each flat side of the piezo strip.

The further strip/strips may be a little stiff, and will then automatically tend to
20 stretch the piezo strip. Also, the further strip/strips may be held loosely in at least one of the support parts, by being inserted into a pocket.

In an important embodiment of the invention, the space between the piezo strip and the further strip is occupied by a substance with the ability to transfer pressure, for instance a silicon substance, the piezo strip and the further strip being
25 substantially symmetrically curved outwards centrally to bound the substance.

In another embodiment of the invention, the support parts are constituted by
30 welding rims for a bubble consisting of two semi-ovoid foil pieces, and the at least one further strip constitutes at least one of the two foil pieces. The piezo strip may then be arranged outstretched in the space right in between the two foil pieces. In addition, the piezo strip may be attached along the whole welding rim, thereby to constitute a boundary between two closed spaces. At least one of the two closed spaces may be filled by a substance having the ability to transfer a pressure. One